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Abstract

Background

Because Vital Statistics data do not include information on Inuit identity in all jurisdictions, mortality rates cannot be calculated specifically for Inuit. However, Inuit in Canada are geographically concentrated—78% live in Inuit Nunangat, and 82% of the area's total population identify as Inuit. While there are limitations, geographic approaches can be employed to calculate mortality for the population of that area.

Data and methods

The Vital Statistics Database (1994 to 2008) and population estimates were used to calculate age-standardized mortality rates (ASMRs) in five-year intervals around the 1996 and 2006 Census years. Mortality rates were calculated for 1- to 19-year-olds living in Inuit Nunangat and those living elsewhere in Canada.

Results

The ASMR in 2004-2008 for 1- to 19-year-olds in Inuit Nunangat was 188.0 deaths per 100,000 person-years at risk, five times the rate (35.3) elsewhere in Canada. The disparity had not narrowed over the previous decade. In Inuit Nunangat, injuries were responsible for 64% of deaths of children and teenagers, compared with 36% in the rest of Canada.

Interpretation

The persistently high mortality rates for children and teenagers living in Inuit Nunangat, compared with the rest of Canada, are important in understanding the health and socio-economic situation of residents of this region.

Keywords

Aboriginal, age-standardized mortality rates, child health, death rates, suicide, vital statistics, wounds and injuries.

Authors

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A number of recent studies have examined life expectancy, mortality, hospitalization, and other health indicators for the four Inuit Nunangat land claim regions.[1-5] Life expectancy at birth for residents of that area is 6 to 11 years less than for people in the rest of Canada,[3,5] and the infant mortality rate is higher.[5,6] To date, child and youth mortality rates for residents of Inuit Nunangat have not been calculated.

Because Vital Statistics data do not include information on Inuit identity in all jurisdictions, mortality rates cannot be calculated specifically for Inuit. However, Inuit in Canada are geographically concentrated—78% live in Inuit Nunangat, and 82% of the area's total population identify as Inuit (Table 1). While there are limitations, geographic approaches can be employed to calculate mortality for the population of that area.

Inuit Nunangat is the Inuktitut term for "Inuit homeland," an expanse comprising more than one-third of Canada's land mass, which extends from northern Labrador to the Northwest Territories. It consists of the four Inuit land claim regions: Nunatsiavut (Northern coastal Labrador), Nunavik (Northern Quebec), the territory of Nunavut, and the Inuvialuit Settlement Region (Northwest Territories and Yukon).

The population of Inuit Nunangat is fast-growing and young. Between 1996 and 2006, the population of the area rose by 14%, compared with an 8% increase in the rest of Canada (Table 1). The primary driver of the increase in Inuit Nunangat was high growth among Inuit, at 18%. The result was a much younger population age structure than that of most other populations in Canada.[7] In 2006, 42% of the population in Inuit Nunangat were aged 1 to 19, compared with 24% of the population elsewhere in Canada.

This study examines disparities[8] in mortality between 1- to 19-year-old residents of Inuit Nunangat and the rest of Canada from 1994 to 2008. Mortality rates are calculated by cause of death.

Table 1
Total, non-Aboriginal and Inuit population, by residence, Canada, 2006

			Inuit subregions			
	Outside Inuit Nunangat	Inuit Nunangat	Inuvialuit Settlement Region	Nunavut	Nunavik	Nunatsiavut
Total population	30,071,225	48,015	5,705	29,325	10,570	2,415
% aged 1 to 19	24	42	34	43	45	36
% change since 1996	8	14	-2	19	21	-14
Non-Aboriginal	30,060,225	7,065	1,520	4,410	920	215
% of total population	96	15	26	15	9	9
% aged 1 to 19	23	15	18	16	11	12
% change since 1996	8	4	-4	11	-2	-28
Inuit	11,000	39,475	3,115	24,635	9,565	2,160
% Inuit	0	82	54	84	89	89
% aged 1 to 19	39	47	40	47	48	39
% change since 1996	62	18	-3	20	25	3

Source: 2006 Census of Population

Methods

A geographic approach was employed to estimate mortality rates for children and teenagers in Inuit Nunangat and in the rest of Canada. A similar technique has been used to examine life expectancy, mortality, hospitalization, cancer incidence, and crime in this region.[1,5,9] Deaths of children younger than age 1 are considered to be infant mortality, and so are not included in this analysis.

A large majority (92%) of the population aged 1 to 19 in Inuit Nunangat identified as Inuit on the 2006 Census (data not shown). At more than 96%, Nunavik and Nunatsiavut had the highest percentages reporting Inuit identity; 65% of the population aged 1 to 19 in the Inuvialuit Region reported Inuit identity.

Each death record in the Vital Statistics Deaths Database contains the decedent's sex, age and usual place of residence (Census Subdivision - CSD). A single underlying cause of death is recorded, based on the International Classification of Diseases 9th (1994 to 1999) and 10th (2000 onwards) revisions (ICD-9 and ICD-10).

The analyses in this study are based on records for people who were aged 1 to 19 when they died. It excludes deaths of non-residents of Canada, deaths of residents of Canada whose province or territory of residence was unknown, and death records lacking the decedent's age or sex. The approach used for this analysis required that death records include geographic identifiers. For the Inuvialuit Region and Nunatsiavut, the complete CSD code was necessary; for Nunavik, either the CSD or Census Division code was needed; and for Nunavut, only the territory code.

The underlying causes of death, based on ICD-9 or ICD-10 codes, were grouped according to the Global Burden of Disease (GBD) classification.[10] The GBD framework differs from the ICD chapters, which categorize diseases by body systems. According to the GBD classification, deaths fall into three main groups: I - communicable, maternal, perinatal, and nutritional conditions; II - non-communicable diseases; and III - injuries. Groups I and II are further classified into specific diseases or conditions. Group III is subdivided into unintentional or intentional injuries and then classified by type. Because self-inflicted injury (suicide) accounted for nearly the entire intentional injury category in this study, for reasons of confidentiality, homicide could not be reported separately. Additional information on the GBD classification, the ICD-9 and ICD-10 codes, and the use of the GBD in Inuit Nunangat is available elsewhere.[10,11]

Small-area population estimates were used to provide detailed counts of those aged 1 to 19 for each CSD in Inuit Nunangat from 1996 through 2006.[12] These estimates are more accurate than those available on the census. The closest population estimates available were used as a proxy. Person-years at risk were calculated by aggregating the five years surrounding each census year (1996 and 2006).

Age-standardized mortality rates (ASMRs) (deaths per 100,000 person-years at risk) were calculated using the method of Chiang[13] in five-year intervals around the 1996 and 2006 Census years (1994 to 1998 and 2004 to 2008) in order to obtain the minimum counts needed to produce rates. The total number of deaths in each five-year interval was divided by the person-years at risk. Mortality rates were age-standardized to the estimated 2001 population age structure of Inuit Nunangat. The Spiegelman method[14] was used to calculate 95% confidence intervals. Rates were also calculated for each of the four regions of Inuit Nunangat. Rate ratios were calculated in order to compare Inuit Nunangat with the rest of Canada.

Results

Overall mortality rates

In 2004-2008, the ASMR at ages 1 to 19 in Inuit Nunangat was 188.0 deaths per 100,000 person-years at risk; this compared with 35.3 deaths per 100,000 in the rest of Canada (Table 2). For both populations, these ASMRs marked a decline from 1994-1998, when the rates had been 210.1 deaths per 100,000 person-years at risk in Inuit Nunangat, and 44.7 in the rest of Canada. The simultaneous decreases in ASMRs meant that the rate ratio comparing children and teenagers in Inuit Nunangat with the rest of Canada did not change significantly over the two periods.

The high overall ASMRs for Inuit Nunangat prevailed across subregions. For instance, in 2004-2008, rates were 152.5 deaths per 100,000 person-years at risk in Nunavut, 307.8 in Nunavik, and 269.1 in Nunatsiavut. Because of small numbers, rates for the Inuvialuit Region were not calculated.

Table 2
Age-standardized mortality rates (ASMR) per 100,000 person-years at risk, by sex, population aged 1 to 19, Canada,[1] Inuit Nunangat, and Inuit subregions 1994 to 1998 and 2004 to 2008

	Canada			Inuit Nunangat			Nunavut			Nunavik			Nunatsiavut		
		95% confidence interval			95% confidence interval			95% confidence interval			95% confidence interval			95% confidence interval	
Sex/Years	ASMR	from	to	ASMR	from	to	ASMR	from	to	ASMR	from	to	ASMR	from	to
Both sexes															
1994 to 1998	44.7	44.0	45.4	210.1	182.6	241.7	211.2	176.3	252.9	262.4	200.1	344.1	248.7	147.2	420.1
2004 to 2008	35.3	34.7	35.9	188.0	163.9	215.7	152.5	125.3	185.6	307.8	245.3	386.3	269.1	177.9	407.0
Males															
1994 to 1998	53.2	52.2	54.2	258.2	215.9	308.8	233.7	183.4	297.7	377.1	274.0	519.1	324.0	168.5	623.0
2004 to 2008	41.7	40.7	42.6	244.5	206.6	289.5	210.4	166.7	265.7	366.9	274.6	490.3	348.8	209.0	582.1
Females															
1994 to 1998	35.7	34.9	36.6	161.2	128.6	202.0	188.2	143.7	246.6	146.4	87.8	244.0	173.9	72.3	418.8
2004 to 2008	28.6	27.8	29.4	129.5	102.2	164.2	91.8	63.7	132.3	247.1	171.5	356.1	187.2	92.1	380.5

[1] excludes residents of Inuit Nunangat
Note: Because of small numbers, rates were not calculated for the Inuvialuit Settlement Region.
Source: Custom population estimates, Demography Division; Vital Statistics Database.

Cause of death

Communicable diseases

Communicable diseases are conditions such as tuberculosis and respiratory infections. In 2004-2008, the ASMR due to communicable diseases for 1- to 19-year-olds was 35.6 deaths per 100,000 person-years at risk in Inuit Nunangat, compared with 9.9 elsewhere in Canada (Table 3). The rate ratio was almost unchanged since 1994-1998, remaining around 3.6 (Table 4).

Non-communicable diseases

Non-communicable diseases are conditions such as cancer, congenital anomalies and neurologic diseases. In 2004-2008, the ASMR for deaths due to non-communicable diseases among children and teenagers was 22.4 deaths per 100,000 person-years at risk in Inuit Nunangat and 12.0 elsewhere in Canada. Since 1994-1998, the ASMRs for non-communicable diseases had fallen in both Inuit Nunangat and the rest of Canada, so the rate ratio was relatively constant over the period at about 2.0.

Injuries

Injuries were the largest contributor to mortality of children and teenagers, accounting for a much larger share of deaths in Inuit Nunangat than in the rest of Canada: 64% versus 36% in 2004-2008 (data not shown). The ASMR for all injuries combined was 115.3 deaths per 100,000 person-years at risk in Inuit Nunangat, compared with 10.9 elsewhere in Canada.

Deaths due to *unintentional* injuries are those in which there was no intent to harm (for example, accidental motor vehicle collisions, unintentional drownings). Deaths due to *intentional* injuries refer to suicide (self-inflicted) and homicide.

In 2004-2008, in Inuit Nunangat, the ASMR per 100,000 person-years at risk was 40.4 deaths for *unintentional* injuries and 74.9 deaths for *intentional* injuries. Rates were much lower elsewhere in Canada, and the rate was higher for *unintentional* (7.8) than for *intentional* injuries (3.1). Since 1994-1998, the rate ratios had not changed significantly.

For children and teenagers in both Inuit Nunangat and the rest of Canada, the majority of deaths due to *intentional* injuries were self-inflicted, that is, suicides; ASMRs for homicide could not be reported because of small numbers. Suicides accounted for a much larger share of all deaths of young people in Inuit Nunagat than elsewhere in Canada: 40% versus 8%.[15-18]

The suicide rate of girls and young women in Inuit Nunangat was approximately 40 deaths per 100,000 person-years at risk from 1994-1998 to 2004-2008, compared with around 2 deaths per 100,000 person-years at risk in the rest of Canada. The rate ratios show suicide rates for girls and young women in Inuit Nunangat to be more than 20 times those in the rest of Canada.

Among boys and young men in Inuit Nunangat, the suicide rate was 77.2 deaths per 100,000 person-years at risk in 1994-1998 and 101.6 in 2004-2008, rates that were not statistically different. By contrast, the suicide rate among boys and young men in the rest of Canada fell significantly from 6.1 to 4.2 deaths per 100,000 person-years at risk. As a result, the suicide rate ratio rose from 15 to 35.

From 1994-1998 to 2004-2008, the percentage of suicides due to hanging/suffocation rose among children and teenagers in Inuit Nunangat (from 70% to 85%) and also in the rest of Canada (from 55% to 72%). Rate ratios for suicides from hanging/suffocation were 38 times higher in Inuit Nunangat than elsewhere in Canada, and those for suicides due to firearms, 51 times higher.

Discussion

Mortality rates among 1- to 19-year-olds in Inuit Nunangat declined since 1994-1998, but so have rates in the rest

Table 3
Age-standardized mortality rates (ASMR) per 100,000 person-years at risk, by sex and cause of death, population aged 1 to 19, Canada† and Inuit Nunangat, 1994 to 1998 and 2004 to 2008

	1994 to 1998						2004 to 2008					
	Canada			Inuit Nunangat			Canada			Inuit Nunangat		
		95% confidence interval			95% confidence interval			95% confidence interval			95% confidence interval	
Sex/Cause of death	ASMR	from	to	ASMR	from	to	ASMR	from	to	ASMR	from	to
Both sexes - All causes	**44.7**	**44.0**	**45.4**	**210.1**	**182.6**	**241.7**	**35.3**	**34.7**	**35.9**	**188.0**	**163.9**	**215.7**
Group I: Communicable diseases	9.4	9.1	9.7	34.3	24.5	48.0	9.9	9.6	10.3	35.6	25.6	49.3
Infectious and parasitic	1.0	0.9	1.1	5.2	2.1	12.4	0.8	0.7	0.9	9.1	4.8	17.6
Group II: Non-communicable diseases	15.7	15.3	16.1	36.3	26.0	50.6	12.0	11.7	12.4	22.4	14.8	33.7
Congenital anomalies	6.9	6.6	7.2	16.4	10.0	26.9	4.7	4.5	5.0	11.5	6.5	20.2
Group III: Injuries	15.5	15.1	15.9	109.6	89.9	133.7	10.9	10.6	11.2	115.3	97.1	136.9
Unintentional	11.2	10.9	11.6	46.8	34.7	63.2	7.8	7.5	8.0	40.4	30.0	54.4
Road traffic	6.6	6.3	6.8	9.6	5.0	18.5	4.3	4.1	4.5	7.7	3.8	15.5
Drownings	1.0	0.9	1.1	X	..	..	0.7	0.6	0.8	7.4	3.7	14.8
Intentional	4.2	4.0	4.4	62.8	48.2	81.8	3.1	3.0	3.3	74.9	60.7	92.5
Self-inflicted	3.3	3.1	3.5	58.5	44.5	77.0	2.2	2.1	2.3	72.1	58.2	89.3
Firearm	0.8	0.7	0.9	16.1	9.5	27.1	0.2	0.1	0.2	9.5	5.2	17.1
Hanging/Suffocation	1.8	1.7	2.0	41.3	29.8	57.3	1.6	1.5	1.7	60.9	48.2	76.9
Males - All causes	**53.2**	**52.2**	**54.2**	**258.2**	**215.9**	**308.8**	**41.7**	**40.7**	**42.6**	**244.5**	**206.6**	**289.5**
Group I: Communicable diseases	10.4	9.9	10.8	40.1	25.8	62.2	10.9	10.4	11.4	40.8	26.6	62.7
Infectious and parasitic	1.1	0.9	1.2	X	..	..	0.8	0.7	1.0	13.9	6.6	29.2
Group II: Non-communicable diseases	16.9	16.3	17.5	41.3	26.6	64.2	13.2	12.7	13.7	18.8	10.1	35.0
Congenital anomalies	7.5	7.2	7.9	22.7	12.5	41.0	4.9	4.6	5.2	12.8	6.1	27.0
Group III: Injuries	20.9	20.3	21.5	147.2	115.6	187.4	14.5	14.0	15.0	163.5	133.5	200.3
Unintentional	14.8	14.3	15.3	68.1	47.9	97.0	10.3	9.9	10.7	58.2	41.1	82.4
Road traffic	8.3	7.9	8.7	16.8	8.4	33.7	5.5	5.2	5.8	11.6	5.2	25.8
Drownings	1.5	1.3	1.7	X	..	..	1.1	1.0	1.3	12.8	6.1	27.0
Intentional	6.1	5.8	6.5	79.1	56.8	110.2	4.2	4.0	4.5	105.3	82.0	135.1
Self-inflicted	5.0	4.7	5.3	77.2	55.2	108.0	2.9	2.7	3.1	101.6	78.9	131.0
Firearm	1.5	1.3	1.6	22.7	12.2	42.1	0.4	0.3	0.4	18.7	10.3	33.8
Hanging/Suffocation	2.6	2.4	2.9	54.5	36.5	81.4	2.0	1.8	2.2	81.3	61.2	108.0
Females - All causes	**35.7**	**34.9**	**36.6**	**161.2**	**128.6**	**202.0**	**28.6**	**27.8**	**29.4**	**129.5**	**102.2**	**164.2**
Group I: Communicable diseases	8.3	7.9	8.8	28.4	16.8	48.1	8.8	8.4	9.3	30.1	18.1	50.0
Infectious and parasitic	0.9	0.8	1.1	X	..	..	0.7	0.6	0.9	X	..	..
Group II: Non-communicable diseases	14.3	13.8	14.9	31.2	18.8	51.9	10.9	10.4	11.4	26.1	15.1	44.9
Congenital anomalies	6.2	5.8	6.6	10.2	4.2	24.5	4.5	4.2	4.9	10.1	4.2	24.3
Group III: Injuries	9.8	9.3	10.2	71.5	50.5	101.1	7.1	6.7	7.4	65.6	47.5	90.6
Unintentional	7.5	7.2	7.9	25.3	14.4	44.7	5.1	4.8	5.4	22.0	12.5	38.8
Road traffic	4.7	4.5	5.1	X	..	..	3.1	2.9	3.3	X	..	..
Drownings	0.5	0.4	0.7	X	..	..	0.3	0.2	0.4	X	..	..
Intentional	2.2	2.0	2.4	46.1	29.7	71.5	2.0	1.8	2.2	43.6	29.4	64.5
Self-inflicted	1.5	1.3	1.6	39.5	24.5	63.5	1.5	1.3	1.6	41.6	27.9	62.1
Firearm	0.1	0.1	0.2	X	..	..	X	..	..	X	..	..
Hanging/Suffocation	1.0	0.9	1.1	27.9	15.8	49.1	1.2	1.1	1.3	39.9	26.5	60.1

† excludes residents of Inuit Nunangat
.. not applicable
X suppressed to meet confidentiality requirements of the Statistics Act
Source: Custom population estimates, Demography Division; Vital Statistics Database

of Canada. Consequently, the rate ratio remained approximately five times higher throughout the decade.

The greatest disparity was for injuries, with rate ratios in 2004-2008 about 10 times higher among children and teenagers in Inuit Nunangat than in the rest of Canada.

In 2004-2008, children and teenagers in Inuit Nunangat were more than 30 times as likely to die from suicide as were those in the rest of Canada. Similarly high suicide rates have been reported for the total population in Inuit regions.[19,20] Half of all deaths of young people in Inuit Nunangat were suicides, compared with approximately 10% in the rest of Canada.

While rate ratios were highest for injuries, disparities also emerged in

Table 4
Rate ratios for age-standardized mortality rates, by sex and cause of death, population aged 1 to 19, Inuit Nunangat compared with Canada,† 1994 to 1998 and 2004 to 2008

Sex/Cause of death	1994 to 1998			2004 to 2008		
	Rate ratio	95% confidence interval		Rate ratio	95% confidence interval	
		from	to		from	to
Both sexes - All causes	**4.7**	**4.1**	**5.4**	**5.3**	**4.6**	**6.1**
Group I: Communicable diseases	3.7	2.6	5.1	3.6	2.6	5.0
Infectious and parasitic	5.2	2.1	12.5	11.7	6.0	22.8
Group II: Non-communicable diseases	2.3	1.7	3.2	1.9	1.2	2.8
Congenital anomalies	2.4	1.5	3.9	2.4	1.4	4.3
Group III: Injuries	7.1	5.8	8.7	10.6	8.9	12.6
Unintentional	4.2	3.1	5.6	5.2	3.9	7.0
Road traffic	1.5	0.8	2.8	1.8	0.9	3.6
Drownings	X	...	...	10.1	5.0	20.5
Intentional	14.9	11.4	19.4	24.1	19.4	29.9
Self-inflicted	17.8	13.5	23.6	32.8	26.2	40.9
Firearm	19.6	11.5	33.4	51.3	27.4	96.1
Hanging/Suffocation	22.5	16.1	31.5	38.0	29.8	48.5
Males - All causes	**4.9**	**4.1**	**5.8**	**5.9**	**5.0**	**7.0**
Group I: Communicable diseases	3.9	2.5	6.0	3.7	2.4	5.7
Infectious and parasitic	X	...	...	16.9	7.9	36.0
Group II: Non-communicable diseases	2.4	1.6	3.8	1.4	0.8	2.7
Congenital anomalies	3.0	1.7	5.5	2.6	1.2	5.5
Group III: Injuries	7.0	5.5	9.0	11.3	9.2	13.8
Unintentional	4.6	3.2	6.6	5.6	4.0	8.0
Road traffic	2.0	1.0	4.1	2.1	0.9	4.7
Drownings	X	...	...	11.5	5.4	24.4
Intentional	12.9	9.2	18.1	25.0	19.3	32.4
Self-inflicted	15.4	10.9	21.7	35.0	26.9	45.6
Firearm	15.5	8.3	29.2	52.4	28.0	98.2
Hanging/Suffocation	20.6	13.7	31.1	40.9	30.4	55.0
Females - All causes	**4.5**	**3.6**	**5.7**	**4.5**	**3.6**	**5.7**
Group I: Communicable diseases	3.4	2.0	5.8	3.4	2.0	5.7
Infectious and parasitic	X	...	...	X	...	...
Group II: Non-communicable diseases	2.2	1.3	3.6	2.4	1.4	4.1
Congenital anomalies	1.6	0.7	4.0	2.2	0.9	5.4
Group III: Injuries	7.3	5.2	10.4	9.3	6.7	12.9
Unintentional	3.4	1.9	6.0	4.3	2.4	7.6
Road traffic	X	...	...	X	...	...
Drownings	X	...	...	X	...	...
Intentional	20.8	13.3	32.5	22.2	14.8	33.3
Self-inflicted	27.2	16.7	44.3	28.4	18.8	43.1
Firearm	...	...	...	...	...	...
Hanging/Suffocation	28.3	15.8	50.7	33.4	21.8	51.2

† excludes residents of Inuit Nunangat
... not applicable
X suppressed to meet confidentiality requirements of Statistics Act
Source: Custom population estimates, Demography Division; Vital Statistics Database

What is already known on this subject?

- Life expectancy at birth for residents of Inuit Nunangat is 6 to 11 years less than that of people in the rest of Canada.
- In 2006, the overall mortality rate of residents of Inuit Nunangat was double that of Canada as a whole.

What does this study add?

- This study provides mortality rates by detailed cause of death for children and teenagers aged 1 to 19 living in Inuit Nunangat, compared with those living elsewhere in Canada for two five-year periods: 1996 (1994-1998) and 2006 (2004-2008).
- Age-standardized mortality rates were higher for children and teenagers in Inuit Nunangat compared with the rest of Canada in both 1994-1998 and 2004-2008.
- Injuries accounted for the largest component of mortality among children and teenagers in Inuit Nunangat.
- In 2004-2008, age-standardized suicide rates were up to 30 times higher among children and teenagers in Inuit Nunangat than in the rest of Canada.

mortality rates due to communicable diseases. In 2004-2008, children and teenagers in Inuit Nunangat were 3.6 times more likely to die from communicable diseases than were those elsewhere in Canada consistent with other evidence.[21] As well, throughout the decade, children and teenagers in Inuit Nunangat were approximately twice as likely to die due to non-communicable diseases, compared with those in the rest of Canada.

Overall, whether they lived in Inuit Nunangat or in the rest of Canada, girls and young women had lower ASMRs than did boys and young men.

Limitations

While the use of national death records to calculate mortality rates for Inuit Nunangat is a strength of this study, this data source has inherent limitations. Because Vital Statistics data do not contain Inuit identifiers, this analysis used a geographic approach to produce mortality rates for Inuit regions rather than for the Inuit population per se. Thus, the rates presented here are not representative of all Inuit in Canada.

As well, the Vital Statistics data record only the primary cause of death, although it is possible that some deaths had multiple underlying causes.

The mortality rates for youth living in Inuit Nunangat are based on small populations and very small numbers of deaths. Confidence intervals are wide and frequently overlap. As a result, what may seem to be substantial differences can be based on few events, and apparently large changes are not significant. In fact, low numbers prevented separate calculations of ASMRs by cause of death for the four Inuit Nunangat land claims regions, and the number of deaths in the Inuvialuit Settlement Region was so low that separate ASMRs could not be calculated.

Conclusion

The findings show higher mortality rates for children and teenagers in Inuit Nunangat, compared with the rest of Canada. The overall mortality rate in 2004-2008 was about five times higher, a disparity that has persisted since the mid-1990s. Self-inflicted injuries are the largest contributor to mortality among young people living in Inuit Nunangat.

References

1. Garner R, Carrière G, Sanmartin C. The health of Inuit, Métis and First Nations adults Living off-reserve in Canada: The impact of socio-economic status on inequalities in health. *Health Research Working Paper Series* (Statistics Canada, Catalogue 82-622-X, No. 004) Ottawa: Statistics Canada, 2010.
2. Luo ZC, Senécal S, Simonet F, et al. Birth outcomes in the Inuit-inhabited areas of Canada. *Canadian Medical Association Journal* 2010; 182: 235-42. doi:10.1503/cmaj.082042.
3. Peters PA. Shifting transitions: health inequalities in Inuit Nunangat in perspective. *Journal of Rural and Community Development* 2012; 7(1): 35-58.
4. Statistics Canada. *Inuit in Canada: Selected Findings of the 2006 Census*. Ottawa: Statistics Canada, 2008. Available at: http://www.statcan.gc.ca/pub/11-008-x/2008002/article/10712-eng.htm. Accessed July 27, 2011.
5. Wilkins R, Uppal S, Finès P, et al. Life expectancy in the Inuit-inhabited areas of Canada, 1989 to 2003. *Health Reports* 2008; 19(1): 7-19.
6. Statistics Canada. Table 102-0704. Mortality, by selected causes of death (ICD-10) and sex, five-year average, Canada and Inuit regions, every 5 years. *CANSIM* (database), 2010. Accessed February 6, 2012.
7. Bélanger A, Gilbert S. The fertility of immigrant women and their Canadian-born daughters. *Report on the Demography Situation in Canada* (Statistics Canada, Catalogue 91-209-XIE) Ottawa: Statistics Canada, 2003.
8. Kindig D. Understanding population health terminology. *The Milbank Quarterly* 2007; 85: 139-61.
9. Charron S, Penney C, Senecal S. Police-reported crime in Inuit-Nunangat. *Crime and Justice Research Paper Series* (Statistics Canada, Catalogue 85-561-MWE00) Ottawa: Statistics Canada, 2010.
10. Lopez AD, Mathers CD, Ezzati M, et al. *Global Burden of Disease and Risk Factors*. Oxford University Press and The World Bank: New York, 2006.
11. Peters PA. Causes and contributions to differences in life expectancy for Inuit Nunangat and Canada, 1994-2003. *International Journal of Circumpolar Health* 2010; 69: 66-77.
12. Statistics Canada. *Census Inuit Tables* (Statistics Canada, Catalogue 89-636-x 2008, No. 1) Ottawa: Statistics Canada, 2008. Available at: http://www.statcan.gc.ca/pub/89-636-x/89-636-x2008001-eng.htm. Accessed July 27, 2011.
13. Chiang CL. *The Life Table and Its Applications*. Malabar: Robert E. Kreiger Publishing, 1984.
14. Spiegelman M. *Introduction to Demography*. Revised Edition. Cambridge Massachusetts: Harvard University Press, 1968.
15. Kirmayer LJ. Suicide among Canadian Aboriginal peoples. *Transcultural Psychiatry* 1994; 31(1): 3-58.
16. Kirmayer LJ, Malus M, Boothroyd LJ. Suicide attempts among Inuit youth: a community survey of prevalence and risk factors. *Acta Psychiatrica Scandinavica* 1996; 94: 8-17.
17. Kirmayer LJ, Boothroyd L, Hodgins S. Attempted suicide among Inuit youth: psychosocial correlates and implications for prevention. *Canadian Journal of Psychiatry* 1998; 43: 816-22.
18. Boothroyd L, Kirmayer L, Spreng S, et al. Completed suicides among the Inuit of northern Quebec, 1982-1996: a case control study. *Canadian Medical Association Journal* 2001; 165(6): 749-55.
19. Macaluay A, Orr P, Macdonald S, et al. Mortality in the Kivalliq region of Nunavut, 1987-1996. *International Journal of Circumpolar Health* 2004; 63(Suppl 2): 80-5.
20. Inuit Tapiriit Kanatami. *Health Indicators of Inuit Nunangat within the Canadian Context 1994-1998 and 1999-2003*. Ottawa: Inuit Tapiriit Kanatami, 2010.
21. Bjerregaard P, Young TK, Dewailly E, Ebbesson SOE. Indigenous health in the Arctic: an overview of the circumpolar Inuit population. *Scandinavian Journal of Public Health* 2004; 32: 390-5